

ABSTRACT

The present invention increases the aperture size of a microphone array by introducing a diffracting structure into the interior of a microphone array. The diffracting structure within the array modifies both the amplitude and phase of the acoustic signal reaching the microphones. The diffracting structure increases acoustic shadowing along with the signal's travel time around the structure. The diffracting structure in the array effectively increases the aperture size of the array and thereby increases the directivity of the array. Constructing the surface of the diffracting structure such that surface waves can form over the surface further increases the travel time and modifies the amplitude of the acoustical signal thereby allowing a larger effective aperture for the array.